

ULT 2008 Programme: 14th -17th August

- [Thursday 14th](#)
- [Friday 15th](#)
- [Saturday 16th](#)
- [Sunday 17th](#)

Parallel Workshops

- [Nanomechanical](#)
- [Quantum Turbulence](#)

And

- [Coslab](#)
- [Supersolids](#)

08.45-08.55	Welcome	
	Young researchers talks	
09.00-09.15	H Junes	Step energies of facets on ^4He Crystals below 0.6 K
09.15-09.30	J Pollanen	Anisotropic Aerogels for Studying Superfluid ^3He
09.30-09.45	E Surovtsev	Orientalional effect of uniaxially deformed aerogel on the order parameter of superfluid ^3He
09.45-10.00	R Bennett	Studies of Superfluid ^3He , Confined to a Single 650nm Slab, Using DC SQUID NMR
10.00-10.15	Ryo Toda	Influence of the Dimensionality of ^4He Films on Superfluidity
10.15-10.30	M Aaroe	Different approaches to measuring Kibble-Zurek phase transitions
break		
11.00-11.45	J Vinen	Review of Quantum Turbulence
11.45-12.20	K Schwab	Nano-mechanical devices (1)
12.20-12.55	M Aspelmeyer	Nano-mechanical devices (2) Quantum-Opto-Mechanics: from laser-cooling towards quantum entanglement of micromirrors
	lunch	<i>In Hub</i>
14.00-18.00	Nano-mechanical workshop Quantum turbulence workshop	<i>Coffee/Tea will be available 15:30 - 16:30</i>

18.00- 19.00	dinner	<i>In Hub</i>
20.00- 22.00	Poster session	<i>In Lower Hub</i>

Programme, Friday August 15th

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09.00- 10.30	Cryogen –Free Workshop Chair H. Godfrin	
	Kurt Uhlig, M Cuthbert Jeremy Good, Giorgio Frossati, Kurt Haselwimmer, Oleg Kirichek, Mikko Paalanen, Henri Godfrin followed by Round Table Discussion	Magnetic refrigeration, pulse- tube dilution refrigerators, nano-cooling
	break	
11.00- 11.45	G Pickett	Review of Cosmology in the Laboratory
11.45- 12.20	M Chan	Supersolid ⁴ He; Progress report from Penn State
12.20- 12.55	J C Davis	Determination of the Dynamical Rotational Susceptibility of Solid ⁴ He.
	lunch	<i>In Hub</i>
14.00- 18.00	Coslab workshop Supersolid workshop	<i>Coffee/Tea will be available 15:30 - 16:30</i>
19.30-	BANQUET	<i>In Savill Court Hotel</i>

09.00-09.45	W P Halperin	Impurity effects on Superfluid ^3He from Aerogel
09.45-10.20	A Golov	Domain walls in quasi-2D superfluid $^3\text{He-A}$
	break	
10.50-11.35	P Coleman	Review of Quantum Criticality
11.35-12.10	S Julian	Quantum criticality: opportunities for ultra-low temperature measurement
12.10-12.45	H Fukuyama	<i>tba</i>
	lunch	<i>In Hub</i>
14.00-14.20	M Neumann	Quantum criticality in ^3He bilayers
14.20-14.55	M Imada	Quantum criticalities in helium and electron systems
14.55-15.15	D Maslov	Non-analytic magnetic response of Fermi- and non-Fermi liquids.
	break	
15.45-16.20	S Buehle-Paschen	Quantum criticality in heavy fermion compounds - The need for lower temperatures
16.20-16.55	J Zaanen	Fermionic Quantum Criticality
16.55-17.30	S Sebastian	Magnetic-field tuned quantum criticality in the quantum magnet $\text{BaCuSi}_2\text{O}_6$
17.30-18.30		Discussion/summary
18.30-	Dinner	<i>In Hub</i>

19.30		
20.00-22.00	Posters + Informal discussion sessions	<i>In Lower Hub</i>

Workshop on Nanoscience, the ULT frontier, Sunday August 17th [BACK](#)

09.00-09.35	M Paalanen	Future prospects in ultra low temperature research
09.35-10.10	S Valenzuela	Amplitude Spectroscopy and Microwave Cooling of Superconducting Artificial-Atoms
10.10-10.45	D Loss	Nuclear Spin Magnetism in Interacting 2DEGs
	break	
11.15-11.50	K Kono	Use of nano-fabricated structures in ULT experiments
11.50-12.25	I Rau	Interactions and Coherence in Open Quantum Dots
12.25-13.00	G Gervais	Non-Abelian electronics
	Optional bag lunch	<i>Venue tbc</i>
14.15-15.15	Discussion session	

Workshop on current problems in Quantum Turbulence: Thursday 14th
 Organisers: J Vinen, A Golov, M Tsubota [BACK](#)

14:00	Session 1: Decay of QT at very low temperatures	
14:00	<i>Introduction</i>	
	<i>Status of existing measurements on the decay of QT at very low temperatures</i>	(i) summary; Eltsov
		(ii) Discussion with comments by Walmsley, Ihas, Tsepelin, Yano, Skrbek, Vinen ...
	<i>Status of present theory (quasi-classical & quantum cascades, crossover region, bottleneck, reconnections, fractal nature of the tangle, losses in ³He and ⁴He)</i>	(i) summary; Kozik
		(ii) summary; Barenghi
		(iii) Discussion
	<i>Numerical methods (vortex filament & GP calculations)</i>	(i) summary; Tsubota
		(ii) Discussion: Hänninen
	<i>Future & sum up</i>	
	Coffee break	

Session 2: Generation of QT by oscillating structures		
	Ladislav Skrbek (Prague): <i>General introduction</i>	a) short overview on various oscillating structures: discs, grids, spheres, wires, forks used in cryogenic environment
		b) introduction to transition from laminar to turbulent drag regime in flow due to oscillating structures in classical fluids, drag coefficient
		c) transition to turbulent drag regime in He II and its analysis in terms of the drag coefficient
		d) critical velocities in He II, scaling
	Hideo Yano (Osaka)	<i>Critical phenomena of quantum turbulence generated by a vibrating wire in superfluid ^4He</i>
	Louise Wheatland (Lancaster)	<i>Anomalous behaviour of quartz tuning forks in superfluid ^4He at low temperatures</i>
	Shaun Fisher (Lancaster) <i>Introduction to ^3He</i>	a) Vibrating objects in ^3He - wires, forks, grids - an overview
		b) Andreev reflection
	Martin Jackson (Lancaster)	<i>Turbulence detection using quartz tuning forks in superfluid ^3He at very low temperatures</i>
	Yusuke Nago (Osaka)	<i>Onset velocity for vortex emission induced by wire vibration in superfluid $^3\text{He-B}$</i>
	Rob de Graaf (Helsinki)	<i>Quartz tuning fork signals in rotating $^3\text{He-B}$ at temperatures below $0.3 T_c$</i>
	S. Fujiyama (Osaka)	<i>Numerical simulations of a force on an oscillating object driven by a superfluid</i>

	Session 3: Visualization of quantum turbulence	
	<i>Chaired by: Steve Van Sciver and Yuri Sergeev</i>	
	Experimental and theoretical introductions by Steve Van Sciver and Yuri Sergeev followed by short contributions by Matthew Paoletti, Dan McKinsey, Shaun Fisher and M Kobayashi	
	<i>Short contributions (time permitting)</i>	
	Juha Tuoriniemi (Helsinki)	Forks: ultra high Q-values, effect of finite compressibility and acoustic resonances in He II and helium mixtures
	Peter Skyba (Kosice)	Comments on electronics aspects of measurement of vibrating structures
	John Owers-Bradley/ Chris Mellor (Nottingham)	On technological aspects of nanomechanical resonators
18:00	Close workshop	

Workshop on Cold Nano-and Micro Mechanics: Thursday 14th [BACK](#)
Organisers: A Armour, J Owers-Bradley, J Parpia

Time	Speaker	Institution	Title
2:15	Introduction to the workshop		
2:20	Livia Conti	Istituto Nazionale di Fisica Nucleare, Italy	Cooling macroscopic resonators in the AURIGA gravitational wave detector
2:40	Menno Poot	Technical University Delft, Netherlands	Bottom-up carbon-based resonators and motion detection of a mechanical resonator integrated into a DC-SQUID
2:50	Questions		

3:00	Eyal Buks	Technion, Israel	Towards mesoscopic effects in superconducting nanomechanical systems
3:20	Miles Blencowe	Dartmouth College, USA	Damping and Decoherence of Nanomechanical Resonators Due to Two Level Systems
3:40	Questions		
3:50	Coffee and a chance to take a first look at nanomechanics related posters		
4:20	<p style="text-align: center;">Discussion Session with the speaker panel:</p> <p>The discussion session will be very informal and we expect a lively interchange in which contributions from participants are likely to be extremely important</p>		
6:00	<p style="text-align: center;">Conclusion of the workshop, followed by dinner</p>		

Workshop on Cosmology and Condensed Matter: Friday 15th August

Organisers: Richard Haley, Grisha Volovik, Ralf Schuetzhold [BACK](#)

Time	Speaker	Title
14:00	M. Krusius	Introduction to Defects in Superfluids
14:15	A.-C. Davis/ M. Sakellariadou	Brane Inflation and Defect Formation/Dynamics of Cosmic Superstrings
14:55	R. Rivers	Kibble-Zurek Causality Bounds and Fundamental Strings
15:20	J. Zaanen	Condensed Matter Physicist's View on AdS-to-high-Tc
15:45	C. Barcelo	Sensitivity of Hawking Radiation to Superluminal Dispersion Relations
16:10		COFFEE/TEA BREAK Posters available in adjacent room
16:30	Y. Kurita	Particle creation in Bose-Einstein Condensates: an analogue of cosmological particle creation

16:55	Y. Bunkov	BEC of magnons (Superfluid ^3He example)
17:20	P. Skyba	Non-Goldstone Collective Mode and Symmetry Breaking Field in Superfluid $^3\text{He-B}$
17:35	H. Kleinert	World Crystal and Third Quantization
18:00		CLOSE

Workshop on Supersolid ^4He : Friday 15th

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Organisers: J Beamish and K Shirahama

The afternoon workshop will start with a series of theoretical talks. Speakers include A Andreev (Moscow), A Balatsky (U of California), L Pollet (ETH Zurich) J Toner (U of Oregon).

- The relationship between elastic stiffening and NCRI
- The role of dislocations in supersolidity
- Flow, vortices and evidence for macroscopic quantum coherence
- Thermodynamic measurements
- Neutron scattering studies
- Behaviour in porous media
- Other "supersolid" candidates.